REMARKS

Claims 1-19 are currently pending in the subject application, and are presently under consideration. Claims 1-19 are rejected. Favorable reconsideration of the application is requested in view of the comments herein.

I. Rejection of Claims 1-3, 5, 6, 8, 9, and 11 Under 35 U.S.C. §103(a)

Claims 1-3, 5, 6, 8, 9, and 11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,774,591 to Black, et al. ("Black") in view of NPL document entitled "*Expert System for Automatic Analysis of Facial Expression*" by Pantic ("Pantic"), further in view of U.S. Patent No. 6,785,410 to Vining, et al. ("Vining"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Representative for Applicant respectfully maintains the position that the combination of Black, Pantic, and Vining fails to teach or suggest claim 1. Claim 1 recites generating a report of the emotional and physical condition of the subject. In the Office Action dated March 7, 2007 (hereinafter "Office Action"), the Examiner states that neither Black nor Pantic teach this element of claim 1, but instead relies on Vining to teach generating a report of the emotional and physical condition of the subject (Office Action, page 3 and page 8). Specifically, the Examiner asserts that Vining teaches a method of reporting findings of an expert analysis of image data that includes the step of generating a report (Office Action, page 3 and page 8; citing Vining, col. 2, ll. 11-12 and col. 3, ll. 37-38).

Representative for Applicant respectfully maintains the position that there is no motivation for one of ordinary skill in the art to combine the teachings of Vining with the teachings of Black and Pantic to achieve the method of claim 1. The argument set forth below regarding a lack of motivation for one of ordinary skill in the art to combine the teachings of Vining with the teachings of Black and Pantic was provided in the Response to the Office Action dated September 11, 2006. However, the Examiner did not address this argument in the Office Action, and is thus repeated.

As conceded by the Examiner, the teachings of Vining are directed to reporting the finding's of an expert's analysis of image data. Because the teachings of Vining are directed to reports on an expert's findings, the teachings of Vining contradict the other elements of claim 1. Specifically, claim 1 recites processing the image of the face of a human subject to identify movements in selected critical areas of the face and comparing the identified movements in the selected critical areas with a database that associates movements in selected critical areas with specific emotional and physical conditions. An expert, such as one that would provide findings in the reports in the teachings of Vining, would not process an image of the face of a human subject to identify movements in selected critical areas of the face, nor would an expert compare the identified movements in the selected critical areas with a database that associates movements in selected critical areas with specific emotional and physical conditions, as recited in claim 1. Claim 1 is thus directed to an automatic system that senses emotions in human subjects, such that analysis of an expert is unnecessary (see, *e.g.*, Present Application, paragraphs 14-17).

The Examiner asserts that "it would have been obvious for one of ordinary skill at the time the invention was made to have added the method of reporting findings of Vining to the method of recognizing facial expression of Black as modified by Pantic for creating a report from a database of expert findings so that 'data mining and other analysis may be conducted'" (Office Action, page 8). However, claim 1 is directed to a method for sensing selected emotions in a human subject, such as facial analysis for the purpose of detecting various emotions and associated physiological conditions that manifest themselves when a subject is exposed to emotion-provoking stimuli (Present Application, paragraph 26). Representative for Applicant further respectfully submits that this provided motivation, specifically the conduction of data mining and other analysis, is unrelated to the objective of claim 1, as provided in the Present Application (see, *e.g.*, Present Application, paragraphs 1-6, 10, and 26).

With regard to the Examiner's rebuttal to the use of improper hindsight (Office Action, page 3), Representative for Applicant respectfully submits an awareness of the decision in *In re McLaughlin*. The decision in *In re McLaughlin*, however, provides a distinction between proper hindsight and improper hindsight, in that proper hindsight takes into account only knowledge

which was within the level of ordinary skill at the time the claimed invention was made and does not include knowledge gleaned only from the applicant's disclosure. *In re McLaughlin*, 443 F.2d 1392 (CCPA 1971). Representative for Applicant respectfully submits that there is no motivation, absent *improper* hindsight, to combine the teachings of Vining with the teachings of Black and Pantic to achieve the method of claim 1. Specifically, Representative for Applicant respectfully submits that combining the teachings of Vining with the teachings of Black and Pantic to achieve the method of claim 1 takes into account knowledge which was outside the level of ordinary skill at the time the claimed invention was made, and includes knowledge gleaned only from the Applicant's disclosure.

Accordingly, for all of the reasons described above, Black, Pantic, and Vining, individually or in combination, do not teach or suggest claim 1. Withdrawal of the rejection of claim 1, as well as claims 2-5 which depend therefrom, is respectfully requested.

Claim 3 depends from claim 1, and should thus be allowed for at least the reasons described above regarding claim 1. In addition, claim 3 recites that recording frame-to-frame changes in critical areas of interest includes recording changes in at least one speckle-spot area in the critical areas of interest. In the Response to Rejection Arguments section of the Office Action, the Examiner does not appear to have acknowledged the amendment to claim 3 (Office Action, page 3). Specifically, claim 3 was amended in the Response to the Office Action dated September 11, 2006, but in the present Office Action, the Examiner merely restates the rejection of claim 3 using the language of claim 3 prior to the amendment (Office Action, pages 3-4). Representative for Applicant again respectfully submits that none of the cited references, individually or in combination, teach or suggest 3. The Examiner relies on Black to teach claim 3 based on the previous language of claim 3. However, Black is silent as to speckle-spot areas in the critical areas of interest, such as "laser speckle" corresponding to a granular pattern observed when an object diffusely reflects coincident laser light (see, *e.g.*, Present Application, paragraph 15). Therefore, neither Black nor any of the cited references teach or suggest recording frame-to-frame changes in critical areas of interest includes recording changes in at least one speckle-

spot area in the critical areas of interest, as recited in claim 3. Withdrawal of the rejection of claim 3 is respectfully requested.

Claim 6 recites a database that associates groups of facial movements with specific emotional and physical conditions of the subject, a database analysis module for comparing the identified movements in the selected critical areas with the database, and a report generator for generating a report of the emotional and physical condition of the subject. For substantially the same reasons described above regarding claim 1, Black, Pantic, and Vining, individually or in combination, do not teach or suggest claim 6. Withdrawal of the rejection of claim 6, as well as claims 7-11 which depend therefrom, is respectfully requested.

Claim 9 depends from claim 6, and should thus be allowed for at least the reasons described above regarding claim 6. In addition, claim 9 has been amended to recite that the means for recording frame-to-frame changes in critical areas of interest includes means for recording changes in at least one speckle-spot area in the critical areas of interest. Representative for Applicant respectfully submits that none of the cited references teach or suggest amended claim 9. Withdrawal of the rejection of claim 9 is respectfully requested.

For the reasons described above, claims 1-3, 5, 6, 8, 9, and 11 should be patentable over the cited art. Accordingly, withdrawal of this rejection is respectfully requested.

II. Rejection of Claims 4 and 10 Under 35 U.S.C. §103(a)

Claims 4 and 10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Black in view of Pantic, further in view of Vining and further in view of U.S. Patent No. 7,095,901 to Lee, et al. ("Lee"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 4 depends from claim 1. As described above, Black, Pantic, and Vining, individually or in combination, do not teach or suggest claim 1, from which claim 4 depends. The addition of Lee does not cure the deficiencies of Black, Pantic, and Vining to teach or suggest claim 1. In addition, claim 4 recites that the step of recording frame-to-frame changes in critical areas of interest includes recording changes in axial distance, to facilitate detection of

axial pulsing movements. The Examiner relies on Lee to teach claim 4, stating that "Lee teaches a method of obtaining iris images including the step of recording changes in axial distance (measuring the distance between a user's face and a camera) to facilitate detection of axial pulsing movements," (Office Action, page 5 and page 12; citing Lee, col. 4, line 61 and col. 8, ll. 10-11). Representative for Applicant respectfully disagrees.

Lee teaches a method for adjusting a focus position in an iris recognition system (Lee, Abstract). Specifically, the system of Lee measures a distance from a camera to a user to indicate to the user if the user is within an acceptable range for iris recognition (Lee, col. 6, ll. 26-28; col. 7, ll. 38-52). Representative for Applicant respectfully submits that the measurement of a distance from a camera to a user, as taught by Lee, does not correspond to recording changes in axial distance, as recited in claim 4. Specifically, Lee merely teaches static distance measurement, and not the recordation of changes in axial distance. In addition, Lee monitors the distance between the user and the camera to determine if the range is acceptable, and not to detect axial pulsing movements. In rejecting claim 4, the Examiner provides no citation in Lee or any other reference for facilitating detection of axial pulsing movements, as recited in claim 4 (Office Action, page 5 and page 12). Therefore, Lee does not teach or suggest recording changes in the axial movement to facilitate detection of axial pulsing movements, as recited in claim 4.

Representative for Applicant additionally respectfully maintains the position that, even assuming *arguendo* that movements of the user's head in the teachings of Lee can be considered axial pulsing movements, the movements, as taught by Lee, are of the user's entire head, and are thus not in critical areas of the face, as also recited in claim 4. In the Response to Rejection Arguments in the Office Action, the Examiner appears to rebut this argument by stating that "the axial pulsing distance can be broadly interpreted as the distance between the individual's head and the camera," (Office Action, page 5). Representative for Applicant respectfully submits that such a statement fails to appreciate the meaning of the word "pulsing", as it is used in the recitation of claim 4.

Furthermore, the rejection of claim 4, as well as the above statement provided by the Examiner, also fail to appreciate that the axial pulsing distance, as recited in claim 4, corresponds

to the critical areas of interest. The teachings of Lee are not directed to critical areas of interest other than an ocular iris, and is only directed to such for purposes of determining acceptable range for recognition, and not for detecting changes in axial pulsing movements. As described above, the only motion that can be considered from the teachings of Lee are those of an entire head. One of ordinary skill in the art would not consider the entire head as a critical area of interest, such as those known to be affected involuntarily when the subject is exposed to emotion-provoking stimuli (see, *e.g.*, Present Application, paragraph 15). Therefore, Representative for Applicant further respectfully submits that one of ordinary skill in the art would not be motivated to combine the teachings of Lee with the teachings of Black, Pantic, and/or Vining to achieve the recitations of claim 4. Accordingly, Black, Pantic, Vining, and Lee, individually or in combination, do not teach or suggest claim 4. Withdrawal of the rejection of claim 4 is respectfully requested.

Claim 10 depends from claim 6. As described above, Black, Pantic, and Vining, individually or in combination, do not teach or suggest claim 6, from which claim 10 depends. The addition of Lee does not cure the deficiencies of Black, Pantic, and Vining to teach or suggest claim 6. In addition, for the reasons described above regarding claim 4, Lee does not teach or suggest claim 10. Therefore, Black, Pantic, Vining, and Lee, individually or in combination, do not teach or suggest claim 10. Withdrawal of the rejection of claim 10 is respectfully requested.

III. Rejection of Claim 7 Under 35 U.S.C. §103(a)

Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Black, in view of Pantic further in view of Vining further in view of U.S. Patent No. 6,549,664 to Yamamoto ("Yamamoto"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 7 depends from claim 6. As described above, Black, Pantic, and Vining, individually or in combination, do not teach or suggest claim 6, from which claim 7 depends. The Examiner relies on Yamamoto to teach the elements of claim 7. However, the addition of

Yamamoto does not cure the deficiencies of Black, Pantic, and Vining to teach or suggest claim 6, from which claim 7 depends. Therefore, Black, Pantic, Vining, and Yamamoto, individually or in combination, do not teach or suggest claim 7. Withdrawal of the rejection of claim 7 is respectfully requested.

IV. Rejection of Claims 12-19 Under 35 U.S.C. §103(a)

Claims 12-19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Black, in view of Pantic, further in view of Vining, further in view of U.S. Patent No. 5,507,291 to Stirbl ("Stirbl"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 12 depends from claim 1. As described above, Black, Pantic, and Vining, individually or in combination, do not teach or suggest claim 1, from which claim 12 depends. The Examiner relies on Stirbl to teach the elements of claim 12. However, the addition of Stirbl does not cure the deficiencies of Black, Pantic, and Vining to teach or suggest claim 1, from which claim 12 depends. In addition, claim 12 recites that generating the image comprises implementing electronic speckle pattern interferometry to generate a speckle-spot pattern of diffusely reflected coincident light that corresponds to the face of the human subject. The Examiner asserts that Stirbl teaches the elements of claim 12 (Office Action, page 14; citing Stirbl, col. 1, ll. 8-10; Abstract). Representative for Applicant respectfully disagrees.

Stirbl teaches remotely determining information regarding a person's emotional state based on a transmitted wireless waveform to determine such physiological parameters as blood pressure, pulse rate, pupil size, respiration rate, and perspiration level (Stirbl, Abstract). An ultrasonic or subsonic pressure wave which has been reflected from a blood vessel below the skin surface of the subject, such as at a retina or temple, can be implemented to determine the instantaneous blood flow rate or velocity (Stirbl, col. 3, ll. 26-31). Stirbl further teaches that blood pressure can also be ascertained by Doppler speckle interferometry to measure speed of pulses with average speed of blood (Stirbl, col. 3, ll. 42-45). However, there is no indication in the teachings of Stirbl that such Doppler speckle interferometry generates a speckle-spot pattern

of diffusely reflected coincident light that corresponds to the face of the human subject, as recited in claim 12.

In rejecting claim 12 based on Stirbl, the Examiner asserts that a speckle pattern of the face can be obtained based on a determination of physical or physiological parameters from the iris (Office Action, page 14; note that Representative for Applicant assumes that the Examiner intended "pupil", as opposed to "iris"). However, the Examiner's assertion is rather attenuated, as there is no teaching or suggestion in Stirbl to indicate that a speckle pattern of the face of a subject can be obtained, or that such a speckle pattern would be desirable or necessary to implement the methodology of Stirbl. As such, Representative for Applicant respectfully submits that such an assertion must be based on improper hindsight, such that the conclusion that a speckle pattern of the face can be obtained based on a determination of physical or physiological parameters from the pupil must have been gleaned only from the Applicant's disclosure. Therefore, neither Stirbl nor any of the other cited art, individually or in combination, teaches or suggests that generating the image comprises implementing electronic speckle pattern interferometry to generate a speckle-spot pattern of diffusely reflected coincident light that corresponds to the face of the human subject, as recited in claim 12. Withdrawal of the rejection of claim 12, as well as claims 13 and 14 which depend therefrom, is respectfully requested.

Claim 13 recites that processing the image comprises identifying fluctuations in multiple-pixel reflectivity of the speckle-spot pattern compared with non-vibratory areas of adjacent facial surfaces to identify the selected critical areas of the face. Stirbl teaches a monitoring unit that derives a contour of an individual and compares the contour with previously determined generic contour data (Stirbl, col. 6, ll. 45-48). The position and configuration of the target may be tracked by processing video input from a camera, and pattern recognition may be utilized to track changes in location of a selected target point as the individual subject moves during the course of the testing period (Stirbl, 48-54). Such teachings of Stirbl, as cited by the Examiner, are unrelated to the language of claim 13. Specifically, this portion of Stirbl is not directed to speckle-spot pattern interferometry, and does not teach or suggest comparison of non-vibratory

areas of a face with fluctuations of pixels to determine critical areas of a face, as recited in claim 13. Instead, the teachings of Stirbl are directed to generating contour data of a target using a camera to track motion changes. Therefore, neither Stirbl nor any of the other cited art, individually or in combination, teaches or suggests that processing the image comprises identifying fluctuations in multiple-pixel reflectivity of the speckle-spot pattern compared with non-vibratory areas of adjacent facial surfaces to identify the selected critical areas of the face, as recited in claim 13. Withdrawal of the rejection of claim 13 is respectfully requested.

Claim 14 teaches that processing the image comprises tracking and recording frame-to-frame changes in at least one of position, size, and intensity of speckle-spots in the selected critical areas of the speckle-spot pattern. The Examiner asserts that Stirbl teaches claim 14 by stating that "changes in selected target point of an individual can be tracked," (Office Action, page 15). Representative for Applicant respectfully disagrees, and notes a typographical error in the citation to Stirbl ("column 56-56"). Representative for Applicant respectfully submits that such a conclusion by the Examiner is not appreciative of the full language of claim 14. Specifically, the assertion that "changes in selected target point of an individual can be tracked", as taught by Stirbl, is not sufficient to demonstrate a teaching tracking and recording frame-to-frame changes in at least one of position, size, and intensity of speckle-spots in the selected critical areas of the speckle-spot pattern, as recited in claim 14. Stirbl teaches that speed of measurement pulses are matched to the average speed of the blood so that there is a modulation in the self interference term of the emitted or reflected light and the reference light (Stirbl, col. 3, ll. 43-47). However, such a teaching of Stirbl demonstrates a comparison of two separate states of an individual (*i.e.*, average blood flow and blood flow under test), and not a change in position, size, and intensity of speckle spots in selected critical areas of a speckle-spot pattern, as recited in claim 14. Therefore, neither Stirbl nor any of the other cited art, individually or in combination, teaches or suggests claim 14. Withdrawal of the rejection of claim 14 is respectfully requested.

Claim 15 recites obtaining a first image of substantially all of the face of the human subject at a beginning of a pulse period associated with a pulsed light source, obtaining a second

image of substantially all of the face of the human subject at an end of the pulse period associated with the pulsed light source, and subtracting the second image from the first image to generate a resulting image of substantially all of the face of the human subject having a high contrast ratio. The Examiner asserts that Stirbl teaches claim 15 based on modulation of a light source and determining a change in intensity (Office Action, pages 15-16). Representative for Applicant respectfully disagrees, and respectfully submits that such a conclusion by the Examiner is not appreciative of the full language of claim 15. Specifically, Stirbl teaches phase-lock modulation of an LED that emits light at a mouth of the subject (Stirbl, col. 13, ll. 44-52). Stirbl is silent as to a pulsed light source and a pulse period, and Representative for Applicant respectfully submits that it is incorrect to equate a phase-lock modulated LED as a pulsed light source. Furthermore, illuminating the mouth of a subject, as taught by Stirbl, is not considered substantially all of the face of the human subject, as recited in claim 15. Furthermore, Stirbl is silent as to subtracting one image from another to obtain a resultant image of substantially all of the face of the human subject having a high contrast ratio, as recited in claim 15. For all of these reasons, neither Stirbl nor any of the other cited art, individually or in combination, teaches or suggests claim 15. Withdrawal of the rejection of claim 15 is respectfully requested.

Claims 16-19 depend from claim 6, and should thus be allowed over the cited art for substantially the reasons described above regarding claim 6. Furthermore, claims 16-19 recite substantially the same subject material as claims 12-15, respectively. Therefore, for the reasons described above regarding claims 12-15, claims 16-19 should be allowed over the cited art. Withdrawal of the rejection of claims 16-19 is respectfully requested.

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CONCLUSION

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,

Date 5/7/07

Christopher P. Harris
Registration No. 43,660

CUSTOMER NO.: 26,294

TAROLLI, SUNDHEIM, COVELL, & TUMMINO L.L.P.
1300 EAST NINTH STREET, SUITE 1700
CLEVELAND, OHIO 44114
Phone: (216) 621-2234
Fax: (216) 621-4072